Supporting Information: Nonelectrostatic Adsorption of Polyelectrolytes and Mediated Interactions between Solid Surfaces

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No Electrostatic Correlation

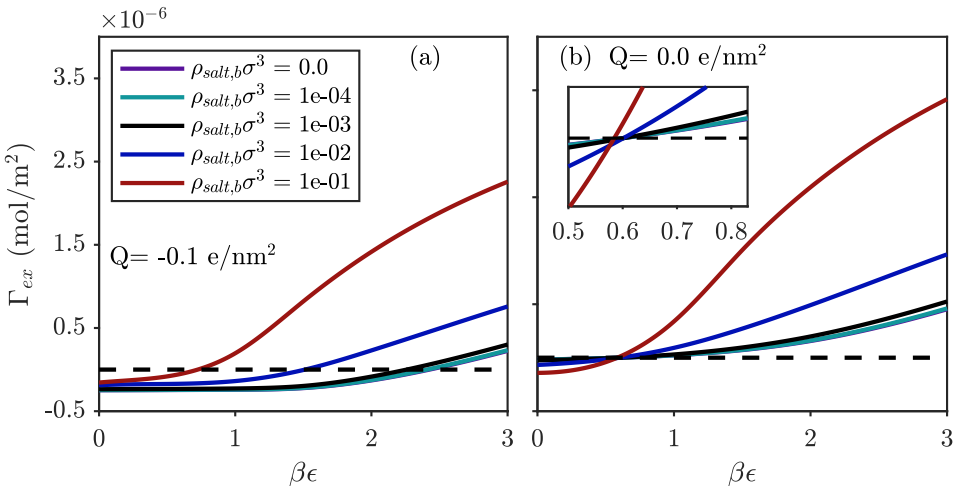

Figure S1: Adsorbed amount as a function of the depth of the nonelectrostatic potential for varying salt concentrations with no electrostatic correlation. (a) Adsorption on like-charge surface with $Q = -0.1$ e/nm^2. (b) Adsorption on neutral surface. The curves for $\rho_{salt,b}\sigma^3 = 0.0$ and $\rho_{salt,b}\sigma^3 = 1 \times 10^{-4}$ are indistinguishable in both panels. The inset in (b) shows the transition region for the salt effects. The bulk polyelectrolyte monomer density is $\rho_{p,b}\sigma^3 = 0.01$; and the polymer chain length is $N = 50$ and the valency of the polyelectrolyte is $Z_p = -0.5$

Varying Monomer Bulk Concentration - Adsorption

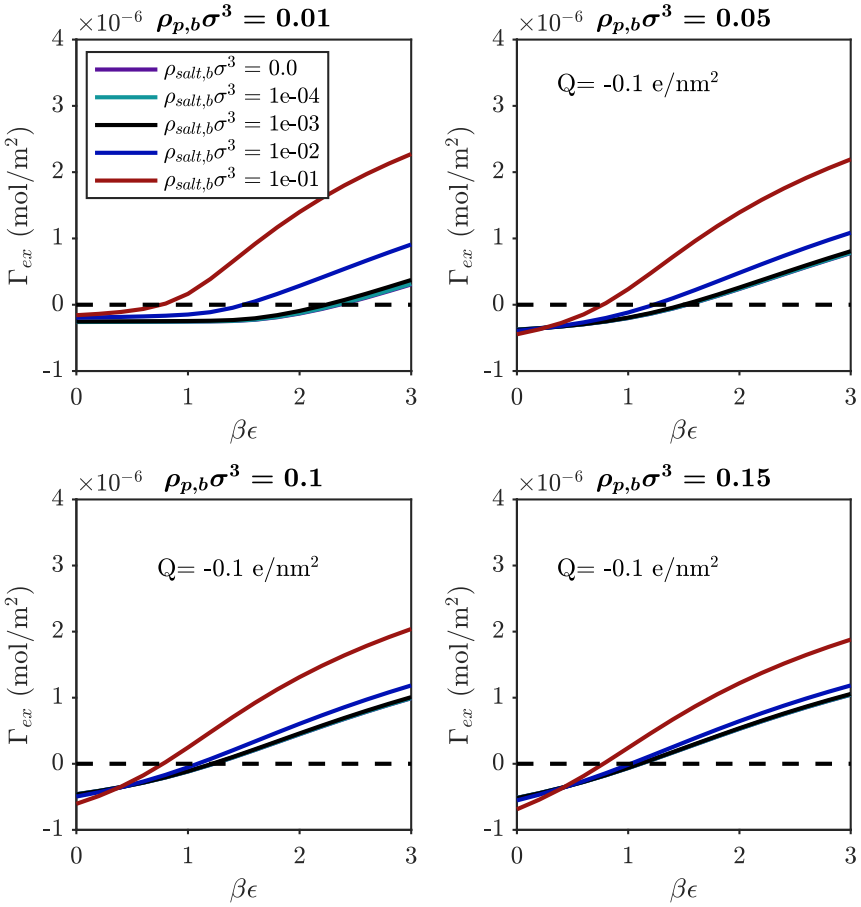

Figure S2: Adsorbed amount as a function of the depth of the nonelectrostatic potential for varying salt concentrations for a negatively charged surface ($Q = -0.1\text{e/nm}^2$). Each panel is for a different bulk concentration. The curves for $\rho_{salt,b}\sigma^3 = 0.0$ and $\rho_{salt,b}\sigma^3 = 1 \times 10^{-4}$ are indistinguishable in most panels. The polymer chain length is $N = 50$ and the valency of the polyelectrolyte is $Z_p = -0.5$.

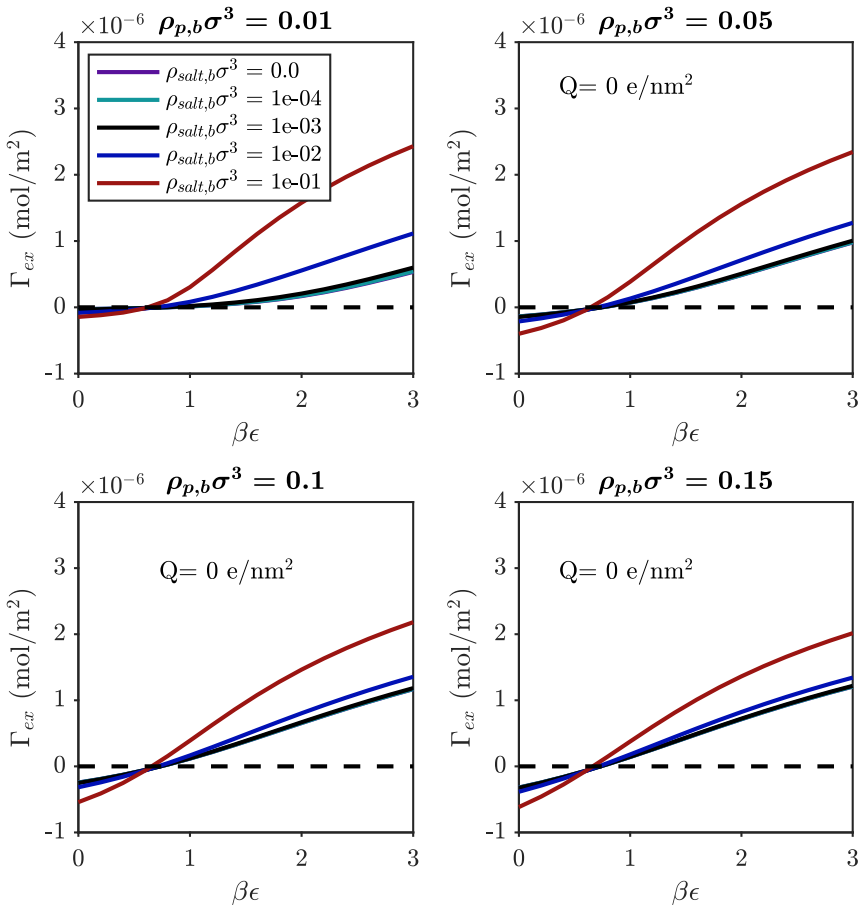

Figure S3: Adsorbed amount as a function of the depth of the nonelectrostatic potential for varying salt concentrations for a neutral surface. Each panel is for a different bulk concentration. The curves for $\rho_{salt,b}\sigma^3 = 0.0$ and $\rho_{salt,b}\sigma^3 = 1 \times 10^{-4}$ are indistinguishable in most panels. The polymer chain length is $N = 50$ and the valency of the polyelectrolyte is $Z_p = -0.5$.

Varying Monomer Bulk Concentration - Interaction

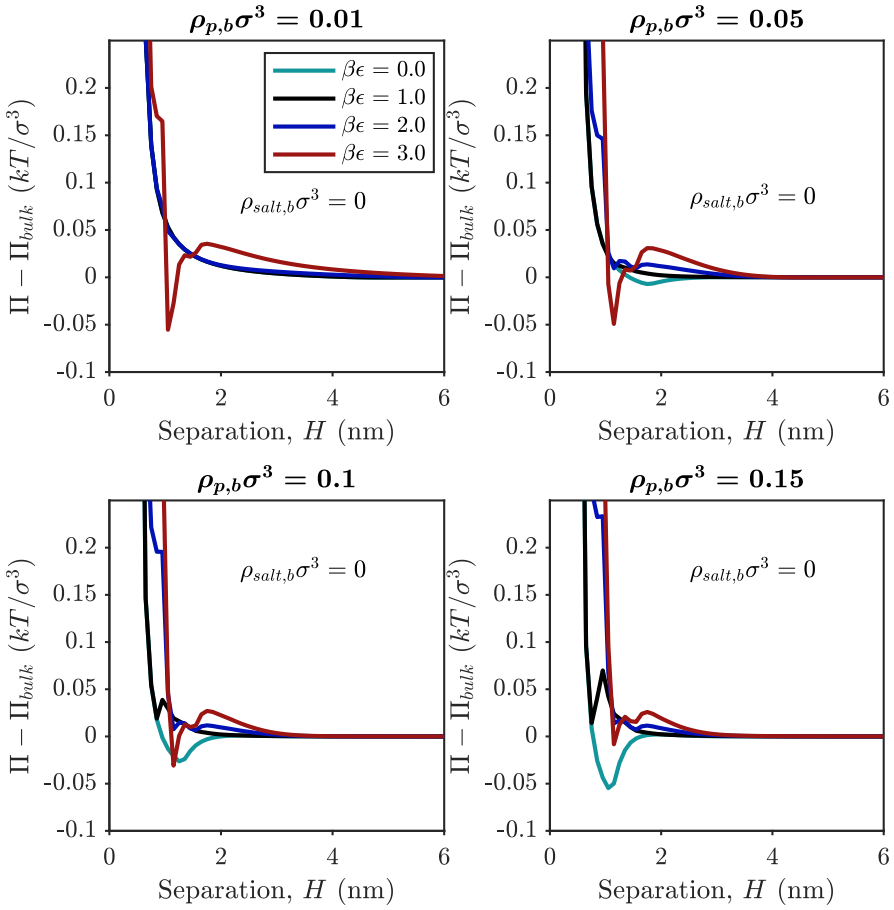

Figure S4: Polyelectrolyte-mediated force between surfaces as a function of surface separation for varying strengths of nonelectrostatic attraction to the surface without the Hamaker attractive potential. The bulk salt concentration is $\rho_{salt,b}\sigma^3 = 0.0$; the polymer chain length is $N = 50$; the valency of the polyelectrolyte is $Z_p = -0.5$; and the surface carries a negative charge of $Q = -0.1$ e/nm^2.

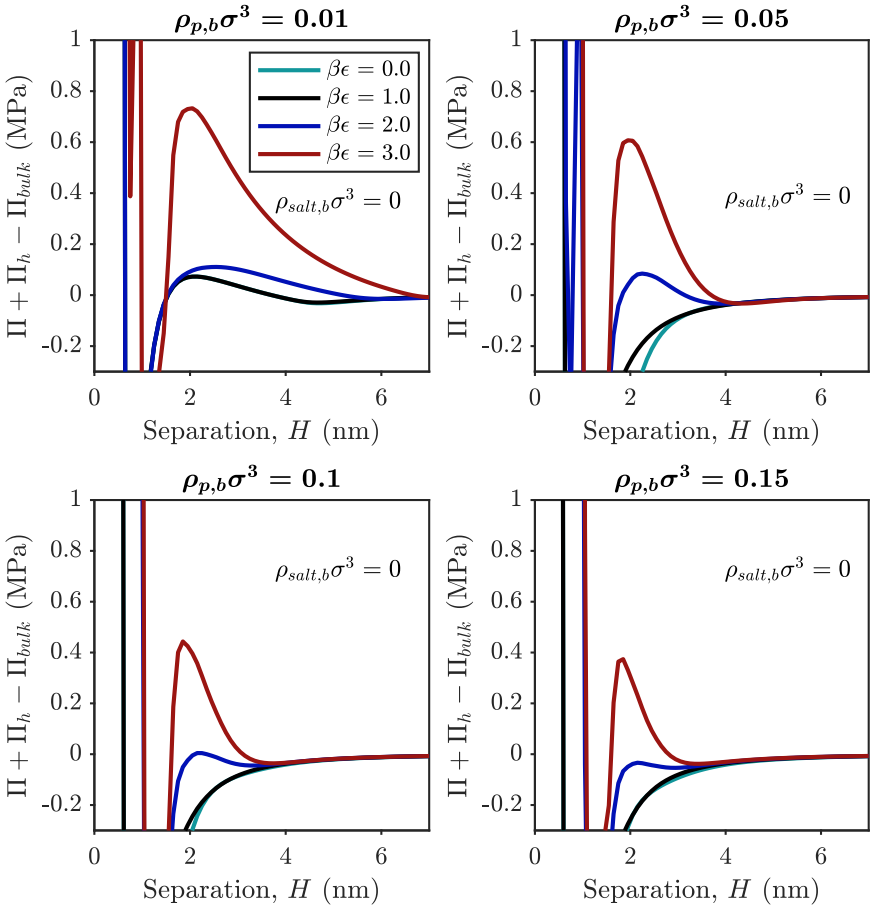

Figure S5: Polyelectrolyte-mediated force between surfaces as a function of surface separation for varying strengths of nonelectrostatic attraction to the surface with the Hamaker attractive potential. The Hamaker constant is 5×10^{-20} J. The bulk salt concentration is $\rho_{salt,b}\sigma^3 = 0.0$; the polymer chain length is $N = 50$; the valency of the polyelectrolyte is $Z_p = -0.5$; and the surface carries a negative charge of $Q = -0.1$ e/nm^2.

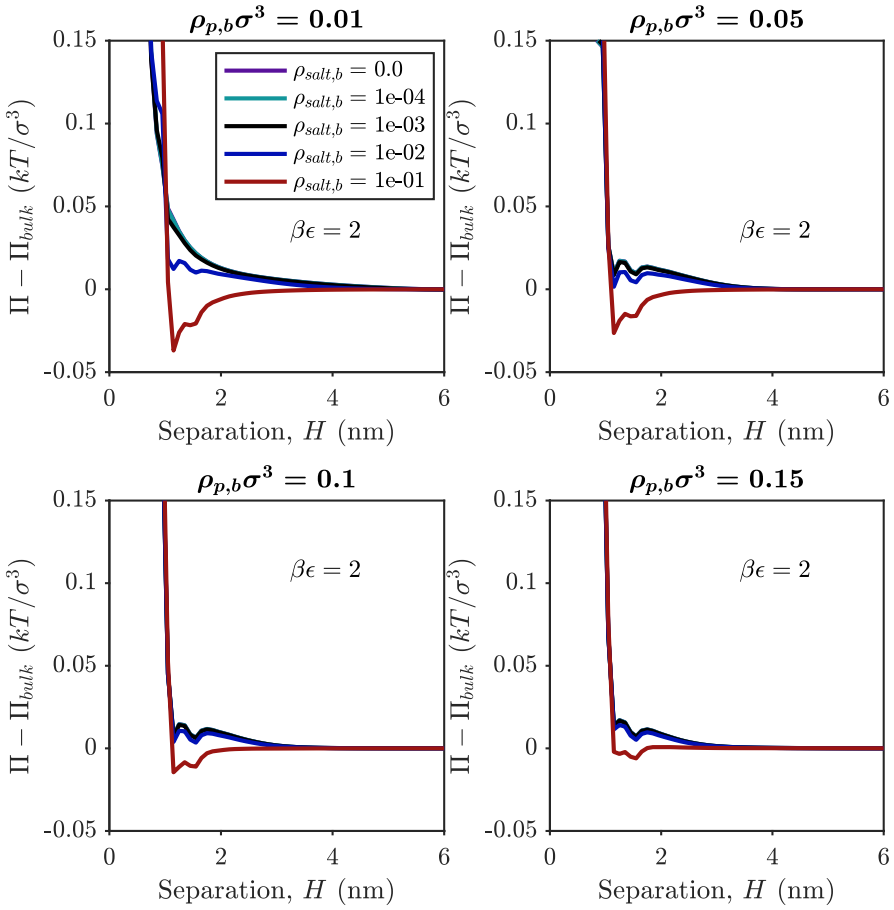

Figure S6: Polyelectrolyte-mediated force between surfaces for varying bulk concentrations of added salt. The polymer chain length is $N = 50$; the valency of the polyelectrolyte is $Z_p = -0.5$; and the surface carries a negative charge of $Q = -0.1\text{e/nm}^2$.